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This poster presentation reports on selected findings from a large-scale survey study of U.S. Army Gulf War veterans, showing that combat exposure is related to PTSD "caseness" for substantial numbers of soldiers. In defining PTSD, the diagnostic algorithm contained in DSMIII-R was followed, using appropriate self-reported symptoms from two scales in the soldier survey. While this PTSD scale was adequate to the purpose, some of the items were less than exact matches to the DSMIII-R listed symptoms. For future work, a more precise set to DSMIII-R (and now, DSMIV) based items are needed. A review of relevant studies shows that DSM-based PTSD checklists perform very well compared to other self report measures (e.g., Mississippi Scale) in identifying clinically diagnosed cases, and in terms of sensitivity and specificity. A team of researchers at the US Army Medical Research Unit-Europe has developed a new PTSD checklist and scoring procedures for use in future soldier studies. The scale is presented along with recommendations for its use.			
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**Assessing Post Traumatic Stress Disorder and PTSD Symptomatology
in U.S. Army Personnel**

**Presentation for the XXXth International Congress on Military
Medicine, June 5 - 11, 1994, Augsburg, Germany**

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**The views of the authors do not purport to reflect the position of
the Department of the Army or the Department of Defense (PARA 4-3,
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178

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XXXth International Congress on Military Medicine

June 5 - 11, 1994 * Augsburg * Germany

Lecture-No: 302

Authors: Bartone, P.;T., Adler, A.,B.; Vaitkus, M.,A.

Country: USA

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in U.S. Army Personnel**

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RESEARCH AFTER TRAUMATIC EVENTS, TO:

1. DOCUMENT REACTIONS, EFFECTS OF EXPOSURE
2. RELATE REACTIONS TO EVENTS (NATURE, INTENSITY, DURATION)
3. UNDERSTAND INDIVIDUAL DIFFERENCES IN RESPONSES TO EVENTS
4. DOCUMENT EFFECTS OF INTERVENTIONS (WHAT HELPS?)
5. EVALUATE LONG-TERM EFFECTS OF EXPOSURE & INTERVENTIONS

SENSITIVITY:

PERCENT OF ACTUAL CASES CORRECTLY IDENTIFIED AS SUCH BY TEST

(HOW WELL DOES THE TEST IDENTIFY "THOSE WHO HAVE IT")

**HIGH SENSITIVITY: MANY ACTUAL CASES CAUGHT BY THE NET
(FEW FALSE NEGATIVES)**

**LOW SENSITIVITY: FEW ACTUAL CASES CAUGHT BY THE NET
(MANY FALSE NEGATIVES)**

SPECIFICITY:

PERCENT OF NON-CASES CORRECTLY IDENTIFIED AS SUCH BY TEST

(HOW WELL DOES THE MEASURE IDENTIFY "THOSE WHO DON'T HAVE IT")

**HIGH SPECIFICITY: FEW NON-CASES CAUGHT BY THE NET
(FEW FALSE POSITIVES)**

**LOW SPECIFICITY: MANY NON-CASES CAUGHT BY THE NET
(MANY FALSE POSITIVES)**

IDEAL TEST

HIGH SENSITIVITY, HIGH SPECIFICITY

GOOD AT IDENTIFYING CASES, WITH FEW FALSE POSITIVES

Table 1: Relative Diagnostic Accuracy of Posttraumatic Stress Disorder (PTSD) Measures

Measure	%correctly classified	κ	Sensitivity	Specificity
MISSISSIPPI SCALE	88.9	.753	94.0	79.7
D-PTSD (sum positive items)	87.5	.714	95.5	72.6
PTSD CHECKLIST	84.9	.672	88.3	78.9
D-PTSD (DSM-III-R rules)	83.5	.639	87.2	72.6
MMPI (Keane-Fairbank scale)	81.5	.605	90.1	68.8
IMPACT OF EVENT SCALE	81.6	.565	91.7	61.8

Adapted from: KULKA, R. A. et. al. (1991), Assessment of Posttraumatic Stress Disorder in the community: Prospects and pitfalls from recent studies of Vietnam Veterans. *Psychological Assessment*, 4, 547-560. Sample was "clinical subjects" of veterans undergoing psychiatric treatment (N=225, except MMPI, N=130). Accuracy reflects how well each scale discriminates diagnosed PTSD cases from other psychiatric cases.

MISSISSIPPI SCALE (Keane), using cutoff score of 89.

D-PTSD = Diagnostic PTSD (non-clinical) structured interview assessing PTSD symptoms.

MMPI = Minnesota Multiphasic Personality Inventory, using cutoff score of 14.

% AT RISK, PTSD
U.S. ARMY COMBAT ARMS SOLDIERS DEPLOYED FOR ODS

<u>DATA COLLECTION POINT</u>	<u>"SHIELD"</u> (Nov '90)	<u>"STORM"</u> (Jan '91)	<u>"POST COMBAT"</u> (May-Oct '91)
<u>N of Cases</u> (w/ complete data)	313	840	8,632
<u>METHOD #1</u>	11 3.5%	21 2.5%	249 2.9%
<u>METHOD #2</u>	50 16%	107 12.7%	1,131 13%

STEPWISE MULTIPLE REGRESSION RESULTS, ODS
PREDICTING: PTSD CASENESS VARIABLE (PTSD-DSM)

PREDICTOR VAR	R-SQUARE	BETA	T	P <
1. ANXIETY	.163	.37	34.7	.0001
2. COMBAT EXPOSURE	.167	.48	8.2	.0001
3. EXPOS*VERT	.172	-.05	-2.2	.0001
4. EXPOS*HARDY	.175	-.33	-5.4	.0001
5. HARDINESS	.176	.05	3.0	.002
6. EXPOS*HORZ	.177	-.06	-2.5	.01

Overall Model: F = 283.3, p < .0001, df = 6, 7918

Vars NOT in model:

HORZ COH, VERT COH

N = 7,924 U.S. ARMY SOLDIERS, 6-12 MONTHS POST WAR

FIGURE 3: STEPWISE MULTIPLE REGRESSION RESULT
PREDICTING: IMPACT OF EVENTS (TOTAL)

PREDICTOR VAR	R-SQUARE	BETA	T	P <
1. COMBAT EXPOSURE	.084	.83	8.2	.0001
2. ANXIETY (T1)	.148	.22	6.8	.0001
3. EXPOS*HARDY	.180	-.56	-5.6	.0001

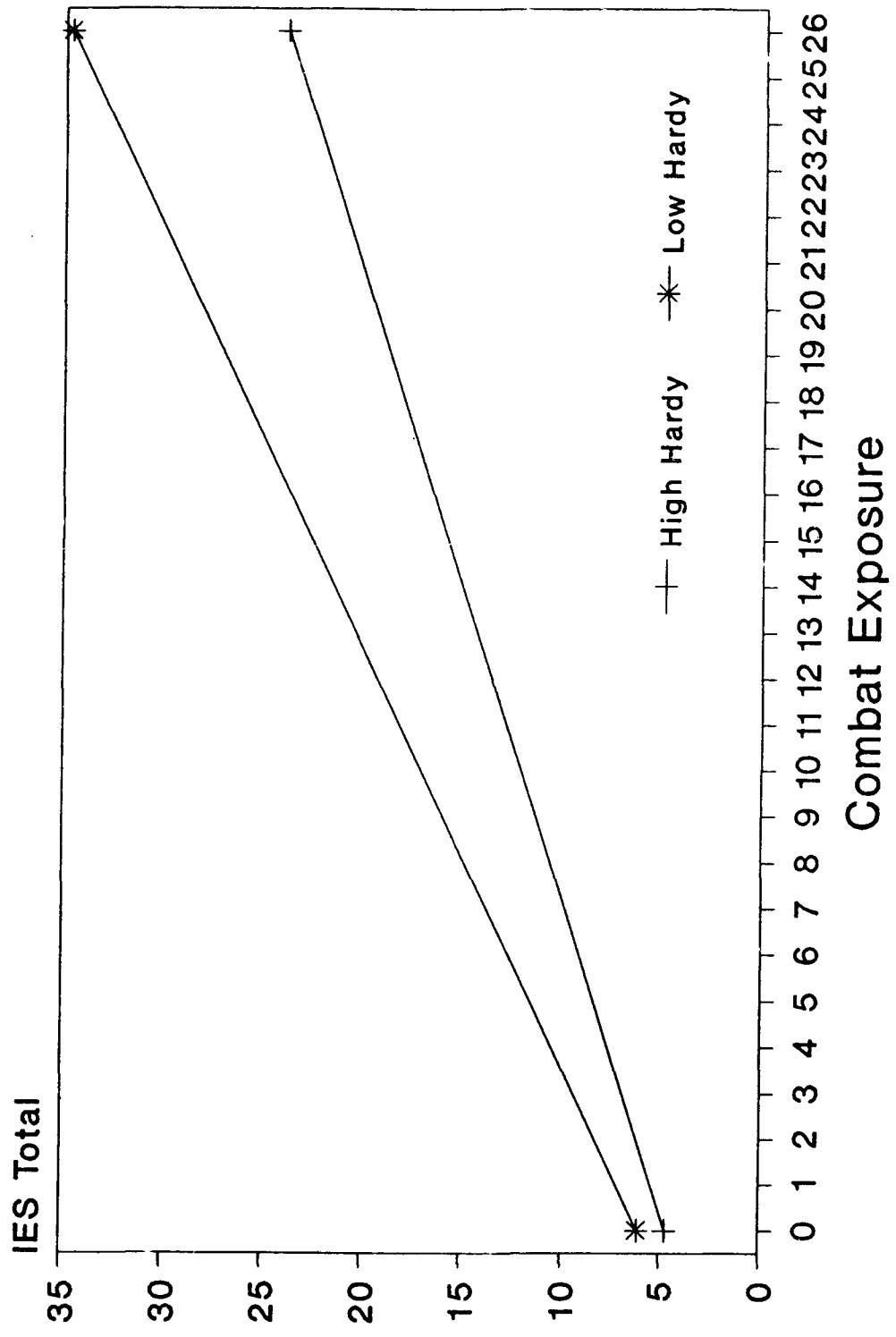
Overall Model: F = 56.9, p < .0001, df = 3, 774

Vars NOT in model:

HORZ COH, VERT COH, HARDY, EXPOS*HORZ, EXPOS*VERT

N = 777 U.S. ARMY SOLDIERS, 6-12 MONTHS POST WAR

Plotted Regression Lines
High vs. Low Hardy Soldiers



N=777 (match b-c) w/ complete data

POST-TRAUMATIC STRESS DISORDER

- A. Experience an event outside the range of usual human experience**
- B. Persistently reexperience the traumatic event in one or more of these ways:**
 - 1. Recollections
 - 2. Dreams
 - 3. Sudden feeling or action of recurrence
 - 4. Distress at events that symbolize or resemble
- C. Persistently avoid associated stimuli or develop numb response in three or more of these ways:**
 - 1. Avoid associated thoughts or feelings
 - 2. Avoid associated activities or situation
 - 3. Psychogenic amnesia
 - 4. Diminish interest in significant activities
 - 5. Detachment or estrangement from others
 - 6. Restricted range of affect
 - 7. Sense of foreshortened future
- D. Develop persistent symptoms of arousal in two or more of these ways:**
 - 1. Difficulty falling or staying asleep
 - 2. Irritability or outbursts of anger
 - 3. Difficulty concentrating
 - 4. Hypervigilance
 - 5. Exaggerated startle response
 - 6. Physiologic reactivity to events that symbolize or resemble
- E. Duration of the disturbance (symptoms in B, C, & D) of at least one month.**

DSM-IV CRITERIA: POST-TRAUMATIC STRESS DISORDER

A. *EXPOSED TO EVENT WITH BOTH:*

1. ACTUAL OR THREATENED DEATH OR SERIOUS INJURY TO SELF OR OTHERS
2. RESPONSE OF INTENSE FEAR, HELPLESSNESS, OR HORROR

B. *TRAUMATIC EVENT PERSISTENTLY REEXPERIENCED, AT LEAST 1 OF:*

1. RECURRENT & INTRUSIVE DISTRESSING RECOLLECTIONS OF EVENT
2. RECURRENT DISTRESSING DREAMS OF EVENT
3. SUDDEN ACTING OR FEELING AS IF TRAUMATIC EVENT IS RECURRING
4. INTENSE DISTRESS AT EVENTS THAT SYMBOLIZE OR RESEMBLE TRAUMATIC EVENT
5. PHYSIOLOGIC REACTIVITY WHEN EXPOSED TO EVENTS THAT SYMBOLIZE OR RESEMBLE

C. *PERSISTENT AVOIDANCE OR NUMMING, AT LEAST 3 OF:*

1. EFFORTS TO AVOID THOUGHTS OR FEELINGS ASSOCIATED WITH TRAUMATIC EVENT
2. EFFORTS TO AVOID ACTIVITIES OR SITUATIONS ASSOCIATED WITH TRAUMATIC EVENT
3. INABILITY TO RECALL AN IMPORTANT ASPECT OF THE TRAUMA
4. MARKEDLY DIMINISHED INTEREST IN SIGNIFICANT ACTIVITIES
5. FEELING DETACHED OR ESTRANGED FROM OTHERS
6. RESTRICTED RANGE OF AFFECT
7. SENSE OF FORESHORTENED FUTURE

D. *PERSISTENT SYMPTOMS OF INCREASED AROUSAL, AT LEAST 2 OF:*

1. DIFFICULTY FALLING OR STAYING ASLEEP
2. IRRITABILITY OR OUTBURSTS OF ANGER
3. DIFFICULTY CONCENTRATING
4. HYPERVIGILANCE
5. EXAGGERATED STARTLE RESPONSE

E. *DURATION OF DISTURBANCE (SYMPTOMS) OF AT LEAST 1 MONTH*

F. *CLINICALLY SIGNIFICANT DISSTRESS OR IMPAIRMENT IN FUNCTIONING*

Key References on PTSD Checklists

Kulka et al. (1991). Assessment of PTSD in the community: Prospects and pitfalls from recent studies of Vietnam veterans. *Psychological Assessment, 3*, 547-560.

Schwarz & Kowalski. (1991). PTSD after a school shooting: Effects of symptom threshold selection and diagnosis by DSM-III, DSM-III-R, or proposed DSM-IV. *American Journal of Psychiatry, 148*, 592-597.

Shalev. (1992). PTSD among injured survivors of a terrorist attack. *Journal of Nervous & Mental Disease, 180*, 505-509.

Solomon & Mikulincer. (1987). Combat stress reactions, PTSD, and social adjustment. *Journal of Nervous & Mental Disease, 175*, 277-285.

Ursano et al. (1992). PTSD in community samples: Development of a self-report instrument. *Meeting of the World Congress of the International Traumatic Stress Society, Amsterdam*.

PTSD SYMPTOMS CHECKLIST

THINK ABOUT WHAT HAPPENED TO YOU RECENTLY. INDICATE HOW OFTEN YOU'VE EXPERIENCED THE FOLLOWING:

1. HAD UPSETTING MEMORIES OF IT
2. HAD UPSETTING DREAMS ABOUT IT
3. SUDDENLY FELT LIKE I WAS GOING THROUGH IT ALL OVER AGAIN
4. FELT UPSET BECAUSE SOMETHING REMINDED ME OF IT
5. TRIED NOT TO THINK ABOUT IT OR HAVE FEELINGS ABOUT IT
6. TRIED TO AVOID ACTIVITIES OR SITUATIONS THAT REMINDED ME OF IT.
7. COULDN'T REMEMBER CERTAIN THINGS ABOUT IT
8. HAD A PHYSICAL REACTION (SUCH AS HANDS SWEATING, HEART POUNDING, DIZZINESS) WHEN SOMETHING REMINDED ME OF IT
9. WASN'T AS INTERESTED IN THINGS THAT USED TO BE IMPORTANT TO ME
10. FELT DISTANT FROM OTHER PEOPLE
11. DIDN'T FEEL THINGS AS INTENSELY AS I USED TO
12. FELT HOPELESS ABOUT THE FUTURE
13. HAD DIFFICULTY FALLING OR STAYING ASLEEP
14. FELT ANNOYED OR ANGRY
15. HAD DIFFICULTY CONCENTRATING
16. FELT MORE ALERT AND KEYED UP THAN USUAL
17. GOT SUDDENLY SCARED OR STARTLED

PTSD Checklist

Instruction Sets

1. Following an acute and specific traumatic event/situation, such as with combat wounded soldiers who are hospitalized for treatment of wounds:

"Think about what happened to you recently, and indicate how often you've experienced each of the following:"

2. More generic:

On _____ (date) you experienced _____ (unusually stressful event).

"Below is a list of reactions people sometimes have after unusually stressful events. Please check each item, showing about how often you experienced each one over the last month. Also, please show if it was something that lasted for just a few days, or if it persisted for over a month."

	Not at all	Rarely	Sometimes	Often	Lasted Over a Month? YES
1. Had upsetting memories of it.	0	1	2	3	X
2. Had upsetting dreams about it.	0	1	2	3	X
3. Suddenly felt like I was going through it all over again					
4. Felt upset because something reminded me of it					
5. Tried not to think about it or have feelings about it					
6. Tried to avoid activities or situations that reminded me of it					
7. Couldn't remember certain things about it					
8. Had a physical reaction (such as hands sweating, heart pounding, di- -ss) when something reminded me of it					
9. Wasn't as interested in things that used to be important to me					
10. Felt distant from other people					
11. Didn't feel things as intensely as I used to					
12. Felt hopeless about the future					
13. Had difficulty falling or staying asleep					
14. Felt annoyed or angry					
15. Had difficulty concentrating					
16. Felt more alert and keyed up than usual					
17. Got suddenly scared or startled					